



Decommissioning Estimate

1320 South Street
Andover, MA 01810

Date: 11/23/22
Calculated By: CS

This Decommissioning Estimate has been prepared by New Leaf Energy in an attempt to predict the cost associated with the removal of the proposed battery energy storage facility. The primary cost of decommissioning is the labor to dismantle and load equipment, as well as the cost of trucking materials off-site. All material will be removed from the site, including the concrete equipment pads and strip footings, which will be broken up at the site and hauled to the nearest transfer station.

The following values were used in this Decommissioning Estimate:

System Specifications		Equipment & Material Removal Rates	
System Capacity (MWh)	48	Battery Module Removal (min/unit)	45
Total Battery Enclosures	100	Electrical Equipment Removal Rate (hr/unit)	0.5
Battery Enclosure Weight (lbs)	20,000	Electric Wiring Removal Rate (min/LF)	3
Number of Inverters	4	Wall Removal Rate (min/LF)	10
Number of Transformers	4	Days req. to break up concrete pads	20
Electrical Wiring Length (ft)	637	Days req. with Rough Grader	1
Length of Perimeter Wall (ft)	645	Days req. with Fine Grader	1
Number of Power Poles	9	Total Truckloads to Transfer Station	245
Total Disturbed Area (SF)	22,643	Round-Trip Time to Transfer Station (hr)	0.5
Total Wall Paneling Weight (lbs)	49,665	Total Truckloads to Battery Recycling	72
Wall I-Beam Weight (lbs)	416	Round-Trip Time to Battery Rec. (hr)	0.5
Number of I-Beams	53		

Labor and Equipment Costs	
Labor Rate (\$/hr)	\$ 63.53
Operator Rate (\$/hr)	\$ 95.47
Bobcat Cost (\$/hr)	\$ 125.00
Front End Loader Cost (\$/Day)	\$ 1,000.00
Excavator Cost (\$/Day)	\$ 1,000.00
Trucking Cost (\$/hr)	\$ 130.00
Backhoe Cost (\$/hr)	\$ 245.00
Power Pole Removal Cost (\$/pole)	\$ 1,500.00
Grader Cost (\$/day)	\$ 1,800.00
Seeding Cost (\$/SF)	\$ 0.10
Fuel Cost (\$/mile)	\$ 0.50
Battery Disposal Fee (\$/MWh)	\$ 1,500.00



Decommissioning Estimate/Plan

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Labor, Material, and Equipment Costs

1. Battery Module Removal and Packaging Cost

Battery modules will be manually removed from each enclosure and packaged for delivery to the battery recycling facility.

$$(Number\ of\ Battery\ Enclosures \cdot Module\ Removal\ Rate) / 60\ Min\ per\ Hour \cdot Labor\ Rate = \\ Battery\ Module\ Removal\ and\ Packaging\ Cost$$

Total = \$ 4,764.75

2. Load Electrical Equipment

Electrical equipment includes transformers and inverters and empty battery enclosures. We assume that companies removing electrical equipment will provide trucking services and will reclaim valuable materials themselves.

$$(Number\ of\ Inverters + Number\ of\ Transformers + Number\ of\ Battery\ Enclosures) \cdot Electrical \\ Equipment\ Removal\ Rate \cdot (Operator\ Rate + Bobcat\ Cost) = \\ Electrical\ Equipment\ Removal\ Cost$$

Total = \$ 1,322.82

3. Break Up Concrete Pads

Concrete pads are broken up using an excavator and jackhammer.

$$Number\ of\ Demolition\ Days \cdot (Excavator\ Cost + Labor\ Cost) =$$

Total = \$ 35,275.20

4. Remove Electrical Wiring

Electrical wiring will be removed from all underground conduits.

$$Cable\ Length \cdot Cable\ Removal\ Rate \cdot (Operator\ Cost + Backhoe\ Cost) \\ = Total\ Cable\ Removal\ Cost$$

Total = \$ 10,843.97

5. Remove Walls

Wall columns, boards, and foundations will be loaded onto a truck and removed from site. Trucking costs included in this line item are for the removal process. Trucking to a recycling facility are included in item #8.

$$(Total\ Length\ of\ Wall \cdot Wall\ Removal\ Rate) \cdot (Operator\ Rate + Bobcat\ Cost + Trucking\ Cost) =$$

Total = \$ 37,675.53



6. Remove Power Poles

Power poles will be removed and shipped off site.

$$\text{Number of Power Poles} \cdot \text{Pole Removal cost} =$$

Total = \$ 13,500.00

7. Seed Disturbed Areas

Seeding cost includes labor and materials for reseeding all disturbed areas including the reclaimed gravel road area, former electrical areas, and areas disturbed by racking foundation removal.

$$\text{Seeding Cost} \cdot \text{Disturbed Area} =$$
$$\text{Total Seeding Cost}$$

Total = \$ 2,264.30

8. Truck to CCDD

All material will be trucked to the nearest CCDD station that accepts construction material (i.e. fence, concrete pads and gravel).

The nearest transfer station is Carlisle Transfer Station

$$(\text{Total Trucks to CCDD} \cdot \text{Roundtrip Time} \cdot \text{Trucking Cost}) =$$
$$\text{Total Trucking Cost to CCDD}$$

Total = \$ 15,925.00

9. Truck to Recycling Facility Plus Disposal Fee

All batteries will be transported to the nearest recycling facility.

$$(\text{Total Trucks to Recycling Facility} \cdot \text{Roundtrip Time} \cdot \text{Trucking Cost}) + (\text{Number Batteries} \cdot$$
$$\text{Battery Disposal Fee}) =$$
$$\text{Total Battery Trucking and Battery Disposal Fee}$$

Total = \$ 154,680.00

Salvage Values

Salvage Value Not Included



Summary of Decommissioning Costs and Salvage Values

Line Item	Task	Cost
1	Remove and Package Battery Modules	\$ 4,764.75
2	Electrical Equipment Loading and Removal	\$ 1,322.82
3	Break Up Concrete Pads	\$ 35,275.20
4	Electrical Wiring Removal	\$ 10,843.97
5	Fence Removal	\$ 37,675.53
6	Power Pole Removal	\$ 13,500.00
7	Seed Disturbed Areas	\$ 2,264.30
8	Trucking to CCDD	\$ 15,925.00
9	Trucking to Recycling Facility Plus Disposal Fee	\$ 154,680.00

Subtotal = \$ 276,251.56

Present Value Total = \$ 276,251.56

Total after 20 years @ 2% Inflation

$$\text{Present Value} \cdot (1 + \text{Inflation Rate})^{\text{Number of Years}} = \text{Future Value}$$

Grand Total = \$410,495.30